

Data as a competitive advantage: Opportunities for publishers under the influence of the “Internet of Things”

Valetie Thiele

Keywords

Data-centric business model, data, customer needs, intelligent everyday object, Internet of Things, value creation, publishing business model, value creation, value proposition, publishing customer

Abstract

The paper deals with the influence of the “Internet of Things” and its opportunities for the publishing business model. It offers a contribution for scientific research in media management to establish the relevance of data-centric business models. The aim of the paper is to work out the increasing relevance of data for the publishing business model. Potentials under the influence of the “Internet of Things” for the publishing business model with regard to four dimensions of business models are worked out: Value creation, value proposition, earnings mechanics and customers. These dimensions show the opportunities that publishers can exploit by integrating intelligent everyday objects as a content channel. Additionally, the author points out that publishing houses operate in a data-centric environment with the integration of intelligent everyday objects as a content channel. The data-centered publishing business model is analysed on the basis of features, in particular with regard to its potential.

Introduction: Potentials for publishers regarding the increasing data volume through new technologies of intelligent everyday objects

Under the influence of the "Internet of Things", a connection is established between the virtual and the physical world, as access to information via the internet is extended by the material dimension - through intelligent everyday objects. The material dimension includes objects such as refrigerators, street lamps, coffee tables or ovens that are clearly identified in their environment, communicate with each other and with their environment, and can therefore be described as intelligent (Barton 2014, p. 15). In addition to intelligent technology, it is above all the collection and processing of data that turn the devices into "intelligent machines" (Hribernik et al. 2011, pp. 134-135; Uckelmann/Michahelles/Harrison 2011, p. V).

Intelligent everyday objects have recently gained enormously in importance for various industries - whether warehouse transport robots, agricultural vehicles with extensive sensor technology and data processing or intelligent everyday objects. The latter leads in particular to the accumulation, networking and evaluation of enormous amounts of data, which require new consideration with regard to their potential and their opportunities for business models. Publishers have not yet integrated intelligent everyday objects into their value chains. However, they have a unique USP - publishing content, which can become interesting for the integration of any intelligent everyday object. This paper examines the extent to which there is potential here.

Objective of the paper

Kaufmann (2015, p. 2) points out that the use of data, which is made possible by networked machines and integration into business processes, is a key driver of future successful value chains and business models. The topic of "data-centric business models" is therefore increasingly being discussed in scientific research (Dorfer 2017, pp. 46-48; Kaufmann 2015, pp. 11-30).

Kaufmann (2015, p. 47) says that the new technologies of the "Internet of Things" are already being used to expand existing business models and that the greatest potential for companies lies under the influence of the "Internet of Things". Data must be evaluated flexibly in order to react proactively to the needs of buyers with a suitable business model in publishing management (Rolf and Sagawe 2015, pp. 125-126).

This paper examines the potential of this data and its evaluation as well as a possible "data-centric publishing business model". The potential analysis first includes special features of a data-centric publishing business model according to Dorfer (2017, pp. 46-48) and Kaufmann (2015, pp. 11-30) in order to determine to what extent the publishing business model can be described as a data-centric business model. According to Dorfer (2017, p. 1, 32, 46-48, 74), data creation, data evaluation and data generation on the basis of existing data, for example, form the basis for the performance of data-centric business models. In this way, general characteristics of a data-centric business model for publishing management can be worked out.

The objective of the paper is then to identify opportunities for a data-centric publishing business model based on

the characteristics of the dimensions of business models according to Gassmann et al. (2013). The reference to these dimensions is the prerequisite for the recording and presentation of relevant business processes and structures for value creation in the publishing business model.

The extent to which the establishment of intelligent everyday objects as a content channel opens up new opportunities for a data-centric publishing business model can be investigated in the paper using the procedure described above.

Scientific background

Rolf and Sagawe: "The Googles core and other spider webs: Die Architektur der digitalen Gesellschaft" (2015) discuss the topic of opportunities for publishing business models and possible design options. Changes in the publishing industry are discussed, but so far there is no analysis of adapted publishing business models taking into account the enormous data growth under the influence of the "Internet of Things" (Sendler 2013, p. 13).

The first publications dealing with the characteristics of data-centric business models can be found in business model research in various disciplines and research contexts. Other terms are used, such as data-centric business models or data-centric services (Tempich/Rieger 2007; Bodenbenner/Tempich/Feuerstein 2011; Müller/Flender/Peters 2012). Analogies can be found here with regard to the description of the value-added logic of the business model type. In all concepts, it is described that "data-centric business models" emphasize their range of services within the framework of an intermediary function in the collection, processing and provision of

data to create added value for the customer (Tempich/Rieger 2007; Bodenbenner/Tempich/Feuerstein 2011, Müller/Flender/Peters 2012). These customers are often offered free data-centric services to generate user data. These are then used by the company for personalised advertising or individualised products. (Bodenbenner/Tempich Feuerstein 2011, p. 6)

Dorfer (2017) with the publication "Erfolgsstrategien: Datenzentrischer Geschäftsmodelle: Eine explorative Untersuchung aus ressourcenorientierter Perspektive" and Kaufmann (2015) with the publication "Business Models in Industry 4.0 and the Internet of Things" analyse the relevance of computer-centric business models under the influence of the "Internet of Things". Dorfer (2017) defines these business models on the basis of selected characteristics (Section Data-centric business models, p 7). However, no relationship is established between data-centric business models and publishing management and the emergence of new intelligent everyday objects as possible content channels for publishers.

As the preceding research shows, the state of research on the business model type of a data-centric publishing business model is still immature. The focus on the development of a data-centric publishing business model under the influence of the "Internet of Things" therefore concentrates on a research gap and thus contributes to scientific progress. The article therefore concentrates on research results that are both well-founded (valid) and unpublished (original) and also provide new insights in the field of publication research. According to Alvesson, Mats and Sandberg (2013, p. 29), the research questions therefore refer to so-called "gap spotting".

Methodology

The scientific basis of the work is based on an interpretative approach (Gephart 2004). Individuals construct their own reality and therefore the author of the paper is not objective.

The author uses an abductive approach according to Alvesson and Kärremann (2007). This approach takes into account the logic of inductive research, i.e. the exploration of something unexpected (Alvesson and Kärreman 2007, p. 1265).

A theoretical-conceptual, but also logical approach serves as a basis for the development of an approach for a data-centric publishing business model. Several specific recommendations for action for publication management are derived from the general (deductive approach/top-down approach). The author uses a document analysis for this purpose. This method was chosen because it guarantees comprehensive access, comparability, long-term analysis, a large sample and a retrospective perspective according to the Costas (2015, p. 50-58) criteria. The author uses both detailed secondary documents (compiled from primary sources) and printed mass media (e.g. journals, newspapers and books).

The author concentrates on scientific findings on business models, more specifically on research results on data-centric business models. The aim is to transfer this to the research of publishing house management and thus make a contribution to media management research. The potentials for the publishing business model can thus be worked out. The abstractness of business models and in particular of data-centric business models

is reduced by concrete solution alternatives for publishers. These design options for publishers within the framework of the "Internet of Things" serve as guidelines for maintaining competitiveness and tapping new sales potential (Eigler 2006, p. 522; Scheuss 2008, p. 216-219).

The validity of the work can be guaranteed by "rich data", i.e. a variety of data based on completeness, sufficient detail and feasibility of the research. The author analyses the individual dimensions of a business model according to Gassmann et al. (2013, p. 4 ff.) and the specification of a data-centric business model according to Dorfer (2017, p.10) and Kaufmann (2015, pp. 11-30).

With the help of the large number of dimensions according to Gassmann et al. (2013, p. 4 ff.) and the specialisation in a data-centric business model according to Dorfer (2017, pp. 46-48) and Kaufmann (2015, pp. 11-30) a detailed analysis of the publishing business model and its opportunities can be carried out under the influence of the "Internet of Things". This guarantees the validity criterion "rich data". The feasibility of the research project is guaranteed above all by the chosen method, which is based on a document analysis.

Data, business models and in particular, a data-centric (publishing) business model under the influence of the "Internet of Things"

A scientific discussion of a possible data-centric publishing business model first requires a discussion of the various influencing factors. For this purpose,

the influencing factor "data (1)" is first discussed, followed by a conceptual classification of "business models (2)". Then, special "data-centric business models (3)" are characterized.

Data

In the scientific literature the term data is often described as signs, data, information and subsequently as knowledge (Aamodt/Nygård 1995; Engelmann/Großmann 2011). Characters in the form of letters or numbers represent the lower level of the term hierarchy, as they occur both alone and without context (Rehäuser/Krcmar 1996, p. 4). We speak of characters as soon as the letters or numbers are sorted according to syntactic rules (Stelzer 2014). These signs become information as soon as they are assigned and interpreted to a context of meaning and thus serve as a pragmatic basis for decision-making for various market participants (Krcmar 2005, p. 15). The top level of the term hierarchy is referred to as knowledge. In contrast to information, knowledge is action-oriented and comprises a higher degree of networking and complexity (Gluchowski/Gabriel/Dittmar 2008, p. 26-27). According to this definition, data can thus be described as the origin of information and knowledge. For companies, this is information that is used significantly for decision-making within the value chain. However, a productive value of this data only emerges through the interpretation and use of the data pool (Dorfer 2016, p. 310; Spitta/Bick 2010, p. 1302).

Business models

Stähler (2002, p. 41-47) defines business models (2) based on Timmers (1998, p. 4) using three components: (a) The

architecture of the product, service and information exchange of the actors involved in value creation; (b) the value proposition for the actors involved; and (c) the revenue model. This paper defines the business model as defined by Gassmann et al. (2013). Gassmann et al. (2013, p. 4ff.) adds the dimension of the customer (d) to this understanding. Thus, the publishing business model is described using four dimensions: value added (a), value proposition (b), earnings model (c), customer (d).

The traditional publishing business model in particular can be differentiated between the distribution and advertising markets. The sales market offers publishing customers content via various channels, which is consumed either free of charge or for a fee. Revenue is thus generated on the recipient market through product sales (content performance). The advertising market is used to place ads within the content in order to generate additional publishing revenues. The revenues are negotiated with the advertising market (advertising service) (Nohr 2013, p. 23; Tzouvaras et al. 2002, p. 66; Wirtz 2008, p. 26).

This classic approach of the publishing business model has not changed since its inception. According to Gassmann et al. (2013, p. 4ff.) the individual dimensions of the publishing business model can be defined as follows: Value creation (a) including the various market participants concentrates on the production of content, which is distributed via various content channels (print/online). Value proposition (b) concentrates on the production of high-quality publishing content and a suitable context for companies to position their advertising to their relevant target group. The profit model (c) refers to content and advertising revenues and the customer (d) is the publisher customer who wants to



consume the publisher's content in different media types. However, the relevance of the individual dimensions of the publishing business model has shifted, e.g. the profit model (c). With the advent of the internet, it is difficult to generate sales with content, which means that new sources of income are increasingly being established alongside the classic publishing business. For example, the publishing house Gruner und Jahr has been selling a wall paint under the magazine name "Schöner Wohnen" alongside the classic magazine "Schöner Wohnen" for years and, furthermore, has its own furniture-brand under the same name (Barti 2018).

Data-centric business models

Dorfer (2017, p. 45, 58) defines "data-centric business models (3)" on the one hand by the fact that the execution of a commercial market service is realised entirely or predominantly via internet technologies. Data-centric business

models can be described by the following special features of Gassmann's et al. understanding of business models (2013): a) The data and the goods traded on them cannot be consumed. Rather, consumption generates new data, which finally increases the amount of data (Scaruffi 2016). Data intermediation can be defined as a central service offering. It collects, aggregates and prepares data for various transaction partners in order to meet their divergent data needs and thus provide them with both economic and social added value. These "data goods" are mainly offered free of charge to the end user with the aim of generating new data in order to create chargeable data goods for the corporate customer market (Dorfer 2017, p. 41-42, 48; Bodenbenner/Tempich/Feuerstein 2011, p. 5-6; Müller/Flender/Peters 2012, p. 146).

b) The second feature is that user data requires human interaction with other humans and machines. Since this is subject to specific data protection regulations, it

can be an obstacle to data monetization. (Dorfer 2017, p. 2, 5, 12-13, 231).

c) The third special feature is the distribution of data to various market participants such as companies or end customers (Dorfer 2017, pp. 46-48). Data-centric business models address multilateral interpenetrating markets as part of their data intermediation as platforms. The existing customer groups are interconnected via multilateral network externalities, i.e. an increase in data of one market participant increases the benefit for further participants and vice versa. (Dorfer 2017, p. 40-47).

Changes in the publisher's business model under the importance of data through intelligent everyday objects

Technological innovations create opportunities for publishing management to change its performance promise, taking into account the increasing volume of data (Breyer-Mayländer 2015, p. 5; Zerdick et al. 1999, p. 130).

Kollmann (2016, p. 8) points out that, according to projections, between 2000 and 2002 as many data were produced as in the 200 years before. With the progress of information and communication technology and in particular the minimization of electronic components, the vision of networked intelligent everyday objects is becoming increasingly lucrative for publishing house management. At the same time, falling prices are making the technology affordable and thus usable (Fleisch and Mattern 2015, p. IX). The use of the internet by private individuals can

also be identified as a key driver of data growth, with private individuals producing more than 70% of data traffic by 2015 (Reinsel/Gantz/Rydning 2017, p. 21). User-driven data production benefited, among other things, from the increasing diffusion of low-cost Internet-enabled end devices (Kollmann 2016, pp. 1-8). Moreover, an increasing data volume can be recorded due to the increasing data production of private internet users, which is due both to the growing degree of networking, increasing digitalization and virtualization (Cisco Systems 2016, p. 5; Kollmann 2016, p. 3-4).

In addition, Kaufmann (2015, p. 2-3) focuses on (1) the change in value creation networks, (2) the individualisation of customer requirements, and (3) embedded systems as an opportunity to change the publishing business model. In particular, long-established companies are under pressure to adapt to dynamic newcomers with changed business models. (1) Value chains have changed in recent years to the extent that participants in the various stages also take on upstream or downstream tasks. This development can also be observed in the publishing industry, e.g. through the integration of the customer into upstream value-added stages. The technical possibilities and trends lead to the establishment of new market participants within the value creation network, as is also the case for publishers under the "Internet of Things". Here, the manufacturer of intelligent everyday objects plays a decisive role in value creation. Different types of media in publishing management (e.g. print and online offerings and the integration of intelligent everyday objects as content channels) can be increasingly networked through the use of new technologies and data exchange (Breyer-Mayländer 2015, p. 5; Zerdick et al. 1999, p. 130). For

example, a direct data exchange between the publishing products is possible, which offers additional added value for both the publisher and the publishing customer. (2) In addition, the increase in personal data helps to exchange individual customer requirements between the products and participating players and thus offer tailor-made publishing products - oriented to individual customer needs (Uckelmann et al. 2011, V). Furthermore, today's customers personalize physical and virtual products according to their requirements and also produce an increase in data volume through their use. In this context, customers are willing to make their personal data available under the influence of the "Internet of Things" as long as they know and are insured for what and how their data is use/protected and their use is transparently communicated to customers. The handling of data and its security thus becomes the focus of attention (Rump/Zapp/Eilers 2017, p. 13). (3) In addition, the "Internet of Things" also requires so-called "embedded systems". According to Berns et al. (2010), this is characterised by the fact that the interplay of mechanics, software and hardware is becoming increasingly relevant in order to offer complex functionalities around the "Internet of Things".

Adaptation of a "data centric business model" as a success factor for publishers under the influence of the "Internet of Things"

Under the influence of the "Internet of Things", the publishing business model can be assigned to a data-centric business model. This can be worked out on the basis of the presented special characteristics of

data-centric business models according to Dorfer (2017, p. 1-2, 46-48):

Characteristic 1:

Data intermediation as a central service offer

The collection, analysis and processing of enormous amounts of data with new intelligent technologies offers opportunities for the existing range of services offered by publishers. For example, sensors in household appliances for intelligent publishing products generate enormous amounts of data and thus a new quality of the database that enables the creation of personality profiles of publishing customers. Refrigerators contain intelligent sensors that can record and analyse the individual usage behaviour of customers both with the material objects of the product (consumption of food) and with the immaterial objects (consumption of publication content). The more detailed and comprehensive measurement of the data in "real time" is ensured, among other things, by the continuous recording of click rates. In "real time", editors know what readers' priorities are in relation to their content (Döpfner 2012, pp. 176; Rolf and Sagawe 2015, pp. 125-126). In "real-time" therefore means that intelligent technologies are used to evaluate the data volumes of machines and make them accessible to humans. If necessary, the machines automatically adapt the content that is directly received - without human intervention.

This form of data value creation as service delivery is the first feature of a data-centric publishing business model. Content is the commodity that enables a multitude of data generation through the exchange

between machines and people, thereby multiplying the value of the content. This data must be evaluated flexibly in order to respond proactively to the needs of buyers with an appropriate data-centric publishing business model (Rolf and Sagawe 2015, pp. 125-126).

Characteristic 2:

Human interaction with machines and humans requires a focus on data protection and data security.

The topics of data protection and data security are thus regaining importance (Friedewald et al. 2010; pp. 251-252, Rolf and Sagawe 2015, pp. 112-113). In this context, publishers should work to gain consumer confidence in the way their personal data is handled. This basis represents the second feature of computer-centric publishing business models, namely the collection and use of data to create personalized and individualized publishing content for distribution through intelligent everyday objects. Publishers therefore face the challenge of data monetization with regard to both data protection and data security (Dorfer 2017, pp. 46-48).

Characteristic 3:

Distribution to different market participants

With the multitude of intelligent everyday objects as a distribution channel for publishers, a further partner enters the value chain of publishers: The manufacturer. Publishers also have the option of integrating manufacturer content into the publishing product, both for intelligent everyday items and for their classic online and offline channels. The existing publication content can thus be further expanded and specified. Conversely, publishers can sell their content to the manufacturers so that they can incorporate and distribute the publishers' content into their intelligent everyday objects. The existing market participant - the publisher's customer - is also gaining in importance within the value chain, as technological developments make it increasingly necessary for this customer to be involved in the value chain. With an increasing number of market participants, publishers are therefore faced with the challenge of agglomerating their content in such a way that it can be used for the different needs of market participants.



Tzouvaras, Schumann and Hess (2002) have already addressed the importance of content aggregation with the X-model.

This takes up the third special feature of data-centric publishing business models, namely that the distribution of content is aimed at interdependent market participants - be they publishers, manufacturers or end customers. In addition, the existing market participants are interconnected via network externalities, so that the data growth on one market side also determines the data growth on the other market side (Dorfer, p. 15, 47-48).

A data-centric publishing business model therefore describes the sales-oriented distribution of content among internet-based intelligent everyday objects. The publishing product consists of specific data. The publishers act as data mediators for the intangible value creation in the form of data collection, data preparation and data provision to the satisfaction of the various market participants.

A data-centric publishing business model as an opportunity to offer intelligent publication products under the influence of the “Internet of Things” via intelligent everyday objects

The emergence of growing data volumes and the potential associated with the processing, consolidation and use of the datapool are the drivers for the development of new business models in the internet economy and in publishing management in particular (Porter/Heppelmann 2014, pp. 67-71).

The new value of data and data analysis methods forms the starting point for the emergence of data-centric business models, which are now also finding their way into media management and the publishing industry in particular (Kollmann 2016, p. 11, 48). According to Kaufmann (2015, p. 24), the prerequisite for the success of a data-centric publishing business model is the availability of data. The market participant who possesses the data can generate the knowledge from the data and incorporate the corresponding know-how into the creation of the publishing product via consumption of intelligent everyday objects.

With the advent of new technologies and thus intelligent everyday objects as a content channel, new opportunities are emerging for the publishing business model. These can be identified according to the presented characteristics of the Gassmann et al. business model (2013, p. 4.ff.): value added (a), value proposition (b), profit model (c), customers (d).

Value added (a)

The intermediate data value creation of the publishing house with a data-centric publishing business model is characterised by the collection of continuous data from all market participants in order to build up a new data stock with these data goods as the basis for a new value creation for all market players. Data is collected, aggregated, processed into information in the form of data analytics and semantic processes in order to make these individual data goods available again and processed to the various customer groups - both users and corporate customers - with individual publishing content (Kollmann, 2016, p. 49; Dorfer, 2016, p. 334). The described characteristics according to Dorfer (2017, p. 78) - that value creation is

largely distributed among external players - is also reflected in the publishing value chain. Within the value chain, there is now an essential partner at all levels, namely the manufacturer of intelligent everyday objects - who, as an external market participant, is of decisive importance for the data-centric publishing business model. This can complete the publishing product by optimising the publishing product through its data, knowledge and any content. In addition, value creation processes change with the development of customer groups, which participate in the value creation across all value creation stages.

Value proposition (b)

The value proposition gains added value for the customer, since publishing products can now be consumed in the immediate context of use. In order to identify the publisher's value proposition, it is crucial to precisely analyse and delimit which customers belong to the target group. Based on this definition, the user potential for publishing content can then be made available via the "intelligent everyday objects" channel (Stähler 2014, pp. 118-119). Customers who want greater flexibility with regard to content channels can thus be convinced. The value proposition for the customer is extended, since the availability of the content is now increased by increasing the content channels and the customer can retrieve the required content when he wants it. Based on the newly acquired data and the use of this data, there is great potential for publishers to expand their value proposition. The individualization of publishing products can also be used to better serve individual customer needs, thus increasing customer loyalty in the long term (Kaufmann, p. 18). In addition, the new technologies offer real-time data exchange

so that the various market participants can work together in real time (Kaufmann 2015, p. 24). Today, high-quality databases are still regarded as a unique value proposition (Otto/Aier 2013, p. 482).

Profit model (c)

When analysing from which sources and with which strategy publishing management can generate earnings under the influence of the "Internet of Things" via the content channel "intelligent everyday objects", it is possible to examine the existing publishing business model and its profit model. With regard to the profit model, new sales opportunities now arise, both for the manufacturer and for the publisher's customer. For example, the publisher's content can be sold to the manufacturer, as the latter can expand its intelligent everyday object with an additional function, namely that of a content supplier. The second option is to sell the publisher's content to the publisher's customers via intelligent everyday objects using paid content models, thus creating an additional source of income. The chance of acceptance on the part of publishing customers is high, as more individual products enable higher prices and thus the willingness of users to pay increases (Kaufmann 2015, p. 19). It is also advisable for publishers to offer a socially interactive benefit, e.g. in the form of user communities, in order to increase the willingness of publishers' customers to pay, as this depends largely on the purpose of an application (Dorfer 2017, pp. 82-83).

Another indirect profit model that addresses the characteristics of a data-centric publishing business model, is to offer free publishing products in order to generate chargeable publishing products with the newly acquired data. Publishers, for example, collect user data in order to

subsequently play out precisely tailored advertisements in the environment of their publishing products. The publishing business can benefit from this: the advertising market benefits in the form of the “long tail approach” through the collection of specific user data for performance-oriented and personalized advertising distribution (Anderson 2009, pp. 23-28). The “long tail approach” describes that with a data-centric publishing business model, a commercial “long tail of data” is created as a benefit for the customer. Data storage creates new long-term value for publishing customers through optimized publishing products and thus economic potential due to low realization and production costs for publishing management.

Another revenue opportunity for publishers is data mining revenue from the growth of the database in the form of limited access to their own database. Publishers also benefit from dynamic economies of scale, as the constant accumulation of data continuously improves the quality of the data goods. This is reflected in more accurate and relevant data goods for the various market participants. This results in decreasing average costs (creation of publishing content) with an increasing output volume (distribution of publishing content) (Junius 1997). In addition, publishers benefit from the effects of the network, as skills and competences from the classic publishing business are transferred to the environment of the “Internet of Things” and thus the creation of a multitude of new content channels through heterogeneous, intelligent everyday objects. Examples of new competitors, such as Google with its original context search business, show that existing competencies and resources are used to expand related business areas. Today, Google offers much more than context search, be it Google Maps or Google Mail (Wirtz 2016, pp. 370-372).

Customers (d)

Due to the increased volume of data, the customer demands individual publishing products that correspond to his individual usage context. The publisher’s customer is more informed and can now choose from a variety of media on the basis of possible access to a variety of content. The demands placed on content by the publisher’s customer are therefore increasing. Within the framework of data-based marketing, better fulfilment of publishing activities oriented to the sales market and thus the production of individual publishing content is taken into account. This concept corresponds to the construct of Anderson’s “Long Tail of Data” approach (2006).

In addition to the actual publishing customer, new customer groups with individual customer wishes can be won through networking via a large number of intelligent everyday objects, e.g. the various customer groups of the manufacturers of intelligent everyday objects.

Possible integration of intelligent everyday objects as a content channel for publishers

How publishers can now use the new technologies under the influence of the “Internet of Things” as a potential content channel for their publishing content and thus integrate them as an opportunity into their data-centric publishing business model will now be explained. This can be explained using the example of an intelligent electric cooker. An intelligent electric cooker implies that it already has a display integrated into its surface. A possible recipe from the publisher’s content could be shown on

this display. The customer thus has the option of directly calling up the contents of the publisher (here the recipe) via the manufacturer's product (here the electric cooker) and implementing them directly while cooking. An additional media channel for retrieving the publisher's contents is therefore not required. What does this mean for publishers? Publishers have the opportunity to integrate their content into the intelligent everyday object and sell this added value to the manufacturer (e.g. an intelligent refrigerator now serves not only as a refrigerator for food but also as a content supplier for publisher content). A possible cooperation with the manufacturer of intelligent everyday objects could be that the manufacturer assumes the costs for the technical provision and necessary interface for the publisher's content. This creates new sales opportunities and thus sources of income for publishers.

The example illustrates the direction in which the publisher's content can move for distribution via intelligent everyday objects: the subject-specific content. This content is geared to the customer's needs when using the intelligent everyday object, i.e. the refrigerator always cools food or the electric cooker is used to cook recipes. With these intelligent everyday objects, the provision of content in the context of cooking offers you the possibility. Publishers now have the opportunity here to fall back on their specific specialist topic collected over many years of work and make the publisher's content available to the manufacturer of the intelligent everyday object. The publisher's content is thus directly related to the customer's use of the intelligent everyday object and thus creates added value for the customer. Above all, the contents are made available to the customer at the right time and in the right place, i.e. exactly with the everyday object that has a reference to

the publisher's contents made available. In addition, a wide variety of intelligent everyday objects can be used to meet a wide variety of individual customer needs. If desired, the customer is also part of the content production and distribution (open innovation approach), which is why the customer can identify more strongly with the publishing product. For example, the publishing customer can be involved in the selection of content in the form of surveys.

Conclusion and Discussion

Main findings

A data-centric business model in publishing management is only rudimentarily regarded as original research object in science. In conclusion, there is currently little knowledge about the possible development of a data-centric business model in publishing management. Against this background, the author of this paper has pursued two objectives with this paper: On the one hand, it should be pointed out why, under the influence of the "Internet of Things", a data-centric publishing business model can be spoken of as a conceptual basis in publishing management and can thus serve as an independent research object in publishing management research in the future. On the other hand, it had to be emphasized which opportunities publishers have as a competitive advantage with the emergence of intelligent everyday objects as a content channel for the publishing business model and to what extent publishers can align their business model accordingly in the future. For scientific research, this means that supplementary research of data-centric publishing business models is required within media management.

After a detailed summary and evaluation of the research results with regard to the first research objective (Section "A data-centric publishing business model...", pp. 11-14), only the central statements are now to be summarised and classified. The publishing business model expands with the new technological possibilities to a data-centric publishing business model. The author highlights this by means of the following features:

Data value creation plays a central role within the value chain. The enormous increase in data through - among other things - the integration of the publisher's customer, the man-to-machine and machine-to-machine communication and the integration of a multitude of new publishing channels via intelligent everyday objects, makes this data value creation possible. Publishing products can do justice to the individual usage context of the publisher's customer by using the enormous amounts of data. For example, an intelligent coffee table serves the needs of the individual publishing customer with regard to his personal interests and takes into account the location, the time available or current events. Moreover, the guarantee of data protection and data security plays a decisive role in this context. On the one hand, the publisher's customer is prepared to provide data or to consume publisher content on intelligent everyday objects if the publisher's customer is convinced that both data protection and data security are taken into account. On the other hand, however, customer confidence must also be created so that this new publishing channel is also accepted. In addition, the author points out that partner management is gaining in relevance because the manufacturer of intelligent everyday objects is entering the value chain and the distribution of the information commodity "publisher content"

is concentrated on interdependent market participants through human-machine and machine-machine communication.

The second research objective of the work is to identify the opportunities for publishers under the influence of the "Internet of Things" for the publishing business model. For this purpose, the different dimensions of the publishing business model under the influence of the "Internet of Things" are examined.

Under the influence of the "Internet of Things", publishers benefit from opportunities for their business model. When considering the four dimensions of a Gassmann (2013) publishing business model, this becomes clear. New customers can be acquired for the publishing product and existing publishing customers can be served even more context-sensitive with regard to their individual usage context. An information overload of the publisher's customer can be avoided. This arises when a large amount of information on a subject is available on the internet, which, among other things, does not correspond to the customer's needs due to the length of the text. Nowadays, customers do not have time for a long search for information on a topic and also do not have time for extensive texts. However, there are also differences here, for example, the German newspaper's "Zeit" target group is very much interested in extensive reporting. However, its publisher also positions itself with such a publishing content, so that the publishing customer has exactly this expectation of extensive reporting.

Value proposition also gains added value compared to publishing customers, for example through the integration of a large number of content channels as well as the processing and expansion of publishing content. The value chain is extended by the

participation of new market participants, whereby publishers can also generate the increase in know-how at the various stages of the value chain. In terms of profit models, publishers now have the opportunity to re-use existing paid content models or generate new revenue through cooperation with the manufacturer.

Outlook

Against the background of the sporadic state of research on a data-centric publishing business model so far, the aim of the paper was to develop a description framework for a possible data-centric publishing business model and its opportunities. For this purpose, business models according to Gassmann (2013, p. 4ff.) and especially data-centric business models according to Dorfer (2017, pp. 46-48) and Kaufmann (2015, pp. 11-30) were characterized and examined with regard to publishers. To the author's knowledge, the paper is thus the first publication to highlight concrete opportunities and approaches with a data-centric publishing business model in relation to the publisher's customer, the publisher's benefit promise, the publishing value chain and the publishing profit model. This will help publishers to realize incremental data-centric business model innovations and contribute to the new state of research of data-centric business models.

To sum up, with the development of new "Internet of Things" related technologies and the associated development of intelligent everyday objects as a possible content channel, publishers now have the opportunity to integrate a large number of additional channels into their portfolio and fill them with personalised, individual content for the various customer groups. One focus is therefore on adapting the publishing business model to the growing

volume of data and thus concentrating on computer-centric publishing business models. The research results serve to support existing publishing business models by optimizing established value creation and value appropriation structures. This gives publishers the opportunity to generate competitive advantages.

Limitations and further research

A data-centric publishing business model is subject to high industry dynamics. This is characterized by technological and market discontinuity. In order for publishers to be successful in the competitive environment in the face of such intense competition, they must exploit the potential of a data-centric publishing business model under the influence of the "Internet of Things" and continuously expand their growth strategies. Network effects, economies of scale or even synergies that arise on the basis of the growing volume of data, its evaluation and increasing market participants can be highlighted as the success drivers of a data-centric publishing business model. The continuous penetration into new markets and in particular the entry into physical markets, however, means an expansion into further areas of application and allows publishers to create holistic data sets on publishing customers. This means that actions can be mapped across all areas of private and professional life, which is why the protection of customers from this risk and the handling of this comprehensive data from customers is also becoming a central task for politics and society.

Limitations in terms of gaining insight into a data-centric publishing business model can be worked out on the basis of a critique of the choice of data sources. A high gain of knowledge can be worked out as a

theoretical orientation point on the basis of the selected sources Dorfer (2017, pp. 46-48) and Kaufmann (2015, pp. 11-30). Nevertheless, research into data-centric business models is still in its infancy in scientific research, which means that the characteristics described can only be generalized to a limited extent.

This paper thus makes a first contribution to the description and theoretical penetration of the research field of a data-centric publishing business model. The paper thus serves as orientation and inspiration for further research projects. Further research will be necessary with regard to the individual functional areas and the special task areas within the data-centric publishing business model. An exemplary research goal would be, for example, to develop the special features of the strategy design of a data-centric publishing business model. The influence of the competitive environment also needs to be explored in more detail.

References

AAMODT, A.; NYGÅRD, M. (1995). Different Roles and Mutual Dependencies of Data, Information, and Knowledge — An AI Perspective on Their Integration. In: *Data & Knowledge Engineering* 16, 1995, 3, p. 191–222 DOI: [https://doi.org/10.1016/0169-023X\(95\)00017-M](https://doi.org/10.1016/0169-023X(95)00017-M)

ALVESSON, M., KÄRREMAN, D. (2007). Constructing Mystery: Empirical Matters in Theory Development. *Academy of Management Review*, Vol. 32, No. 4, 1265–1281 DOI: <http://doi.org/10.5465/amr.2007.26586822>

ALVESSON, M., SANDBERG, J. (2013). Constructing Research Questions. *Doing Interesting Research*. <http://site.ebrary.com/lib/alltitles/docDetail.action?docID=10675851> (28.10.2019). 10.3917/mana.175.0404. DOI: <http://doi.org/10.4135/9781446270035>

ANDERSON, C. (2006). *The Long Tail. Der lange Schwanz*. München: Hanser

ANDERSON, C. (2009). *Free: The Future of a Radical Price*. New York DOI: <http://doi.org/10.3359/>

oz1001084

BARTI, M. (2018). Wie "Schöner Wohnen" mit dem Verkauf von Farben und Möbeln Rekordumsätze erzielt. *kressNEWS*. <https://kress.de/news/detail/beitrag/140383-wieschoener-wohnen-mit-dem-verkauf-von-farben-und-moebeln-rekordumsaetze-erzielt.html> (31.10.2019)

BARTON, T. (2014). *E-Business mit Cloud Computing. Grundlagen/ Praktische Anwendungen/ verständliche Lösungsansätze*. Wiesbaden: Springer Vieweg. DOI: <http://doi.org/10.1007/978-3-8348-2426-4>

BERNS, K.; SCHÜRMANN, B.; TRAPP, M. (2010). *Eingebettete Systeme. Systemgrundlagen und Entwicklung eingebetteter Systeme*. Wiesbaden. Vieweg+Teubner Verlag/ GWV Fachverlage GmbH Wiesbaden

BODENBENNER, P.; TEMPICH, C.; FEUERSTEIN, L. (2011). Turning Data into Profit Success Factors in Data-Centric Business Models. Bonn DOI: <http://doi.org/10.13140/RG.2.2.26191.69282>

BREYER-MAYLÄNDER, T. (2015). Medienkonvergenz: Auswirkungen auf die traditionellen Geschäftsmodelle von Zeitungsverlagen. In T. Breyer-Mayländer, (Eds.), *Vom Zeitungsverlag zum Medienhaus. Geschäftsmodelle in Zeiten der Medienkonvergenz* (pp. 15–27). Wiesbaden: Springer DOI: http://doi.org/10.1007/978-3-658-04100-7_1

COSTAS, J. (2015). Qualitative Datenerhebung. VHB – Qualitative Methoden der Managementforschung. Proceedings of the seminar Qualitative Research Methods. 1–58

Cisco Systems, Inc. (2016). *The Zettabyte Era: Trends and Analysis*. <http://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni-hyperconnectivity-wp.html> (31.10.2019)

DORFER, L. (2016). Datenzentrische Geschäftsmodelle als neuer Geschäftsmodelltypus in der Electronic-Business-Forschung. Konzeptionelle Bezugspunkte, Klassifikation und Geschäftsmodellarchitektur. In: *Schmalenbachs Zeitschrift für betriebswirtschaftliche Forschung* 68, 2016, 3, p. 307–369 DOI: <http://doi.org/10.1007/s41471-016-0014-9>

DORFER, L. (2017). *Erfolgsstrategien datenzentrischer Geschäftsmodelle. Eine explorative Untersuchung aus ressourcenorientierter Perspektive*. Berlin, Heidelberg: Springer-Verlag DOI: <http://doi.org/10.1007/978-3-658-23549-9>

DÖPFNER, M. (2012). *Leser- und Kundenorientierung in einer digitalisierten*

- Medienwelt. Eine Zwischenbilanz. In R. Stadler, W. Brenner, A. Herrmann, (Eds.), Erfolg im digitalen Zeitalter. Strategien von 17 Spitzenmanagern (pp. 167–181). Frankfurt am Main: F.A.Z.-Institut für Management-, Markt- und Medieninformationen GmbH
- EIGLER, J. (2006). Aufbauorganisation - Modelle für Medienunternehmen. In C. Scholz (Eds.), Handbuch Medienmanagement (pp. 519–538). Berlin, Heidelberg: Springer-Verlag. DOI: http://doi.org/10.1007/3-540-32879-3_25
- ENGELMANN, F.; Großmann, C. (2011). Was wissen wir über Information? In: Hildebrand, Knut u. a. (Eds.): Daten- und Informationsqualität. Auf dem Weg zur Information Excellence. Wiesbaden, p. 3–24 DOI: http://doi.org/10.1007/978-3-658-21994-9_1
- FLEISCH, E., MATTERN, F. (2015). Das Internet der Dinge: Ubiquitous Computing und RFID in der Praxis. Berlin Heidelberg: Springer DOI: <http://doi.org/10.1007/3-540-28299-8>
- FRIEDEWALD, M., RAABE, O., Georgieff, P., Koch, D. J., Neuhäusler, P. (2010). Ubiquitäres Computing. Das "Internet der Dinge" - Grundlagen, Anwendungen, Folgen. Berlin: edition sigma
- GASSMANN, O. FRANKENBERGER, K. CSIK, M. (2013). Geschäftsmodelle entwickeln. München: Hanser
- GEPHART, R., (2004). From the editors. Qualitative Research and the Academy of Management Journal, The Academy of Management Journal, Vol. 47, No. 4, 454–462 DOI: <http://doi.org/10.5465/AMJ.2004.14438580>
- GLUCHOWSKI, P.; GABRIEL, R.; DITTMAR, C. (2008). Management-Support-Systeme und Business Intelligence. Computergestützte Informationssysteme für Fach- und Führungskräfte. Berlin/Heidelberg DOI: <http://doi.org/10.1007/978-3-540-68269-1>
- HRIBERNIK, K. A., HANS, C., KRAMER, C., THOBEN, K.D. (2011). A Service-oriented, Semantic Approach to Data Integration for an Internet of Things Supporting Autonomous Cooperating Logistics Processes. In D. Uckelmann, M. Harrison, F. Michahelles (Eds.), Architecting the internet of things (pp. 131-158). Berlin/Heidelberg DOI: http://doi.org/10.1007/978-3-642-19157-2_6
- KAUFMANN, T. (2015). Geschäftsmodelle in Industrie 4.0 und dem Internet der Dinge. Wiesbaden: Springer Fachmedien. DOI: <http://doi.org/10.1007/978-3-658-10272-2>
- KOLLMANN, T. (2016). E-Business. Grundlagen elektronischer Geschäftsprozesse in der Digitalen Wirtschaft. Wiesbaden: Springer Gabler
- KRCMAR, H. (2005). Informationsmanagement. Berlin: Springer. DOI: <http://doi.org/10.1007/978-3-662-45863-1>
- JUNIUS, K. (1997). Economies of Scale: A Survey of the Empirical Literature. Kiel Institute of World Economics, Department IV, Working Paper No. 813. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=8713 (16.10.2019) DOI: <http://doi.org/10.2139/ssrn.8713>
- MÜLLER, G.; FLENDER,; PETERS, M. (2012). Vertrauensinfrastruktur und Privatheit als Ökonomische Fragestellung. In: Buchmann, Johannes (Eds.): Internet Privacy. Berlin, Heidelberg, p. 143–188. DOI: http://doi.org/10.1007/978-3-642-31943-3_3
- NOHR, H. (2013). Zeitungen auf der Suche nach digitalen Geschäftsmodellen. In: Bettina Schwarzer (Eds.): Zeitungsverlage im digitalen Wandel. Aktuelle Entwicklungen auf dem deutschen Zeitungsmarkt. Baden-Baden (Online-Medien-Management, 2), p. 11–50 DOI: <http://doi.org/10.5771/0010-3497-2014-1-138>
- OTTO, B.; AIER, S. (2013). Business Models in the Data Economy: A Case Study from the Business Partner Data Domain. <http://aisel.aisnet.org/wi2013/30> (01.10.2019)
- PORTER, M. E.; HEPPELMANN, J. E. (2014). How Smart, Connected Products are Transforming Competition. In: Harvard Business Review 92, 2014, 11, p. 64–88
- REHÄUSER, J.; KRCMAR, H. (1996). Wissensmanagement im Unternehmen. Hohenheim
- REINSEL, D.; GANTZ, J.; RYDNING, J. (2017). Data Age 2025: The Evolution of Data to Life-Critical, an IDC White Paper. <http://www.seagate.com/de/de/our-story/data-age-2025/> (28.10.2019)
- ROLF, A., Sagawe, A. (2015). Des Googles Kern und andere Spinnennetze. Die Architektur der digitalen Gesellschaft. Konstanz, München: UVK Verlagsgesellschaft
- RUMP, J., ZAPP, D., EILERS, S. (2017). Erfolgsformel: Arbeiten 4.0 und Führung 4.0. Institut für Beschäftigung und Employability IBE, 1-47
- Scheuss, R., (2008). Handbuch der Strategien. 220 Konzepte der weltbesten Vordenker. Frankfurt am Main: Campus Verlag
- SCARUFFI, P. (2016). Big Data: History, Trends and Future. <http://www.scaruffi.com/singular/bigdata.html> (15.08.2019).
- SENDLER, U., (2013). Industrie 4.0. Beherrschung der industriellen Komplexität mit SysLM. Berlin: Springer Vieweg. DOI: <http://doi.org/10.1007/978-3-642-36917-9>

SPITTA, T.; BICK, M. (2010). Die Informationswirtschaft. In: WISU-Das Wirtschaftsstudium 39, 2010, 10, p. 1300–1306

STÄHLER, P. (2002). Geschäftsmodelle in der digitalen Ökonomie. Merkmale, Strategien und Auswirkungen. Lohmar/Köln

STÄHLER, P. (2014). Geschäftsmodellinnovationen oder sein Geschäft radikal neudenken. In: Schallmo, Daniel, R. A. (Eds.): Kompendium Geschäftsmodell-Innovation: Grundlagen, aktuelle Ansätze und Fallbeispiele zur erfolgreichen Geschäftsmodell-Innovation. Wiesbaden, p. 109–136 DOI: http://doi.org/10.1007/978-3-658-04459-6_5

STELZER, D. (2014). Wissen. <http://www.enzyklopaedie-der-wirtschaftsinformatik.de/wi-enzyklopaedie/lexikon/daten-wissen/Wissensmanagement/Wissen/index.html/?searchterm=wissen> (31.10.2019)

TEMPICH, C.; Rieger, V. (2007). Data-Centric Business Models - Leveraging the Hidden Treasures of the Telecom Industry. Bonn DOI: <http://doi.org/10.13140/RG.2.2.21692.23687>

TIMMERS, P. (1998). Business Models for Electronic Markets. In: Electronic Markets 8, 1998, 2, p. 3–8 DOI: <http://doi.org/10.1080/10196789800000016>

TZOUVARAS, A., SCHUMANN, M., HESS, T. (2002). Das X-Modell für die Medienindustrie, IM Die Fachzeitschrift für Information Management & Consulting, Vol. 17, No. 3, 65–71

UCKELMANN, D., HARRISON, M., MICHAHELLES, F., (2011). An Architectural Approach Towards the Future Internet of Things. In D. Uckelmann, M. Harrison, F. Michahelles. (Eds.), Architecting the internet of things (pp. 1–24). Berlin, Heidelberg, New York: Springer DOI: http://doi.org/10.1007/978-3-642-19157-2_1

ZERDICK, A., SCHRAPE, K., GOLDHAMMER, K., LANGE, U., T., VIERKANT, E., LOPEZ-ESCOBAR, E., Silverstone, R. (1999). Die Internet-Ökonomie. Strategien für die digitale Wirtschaft. (2nd ed.). Berlin: Springer

WIRTZ, B. W. (2008). Medien- und Internetmanagement: Springer Gabler, Wiesbaden

WIRTZ, B.W. (2016). Electronic Business. Springer Gabler, Wiesbaden DOI: <http://doi.org/10.1007/978-3-658-10347-7>

About the Author

PhD student Valerie Thiele

(Faculty of Business Management, especially media management / University of Siegen)

Valerie.thiele@uni-siegen.de

Tel. +491578 5063123

Valerie Thiele studied business management at the University of Göttingen, specialising in general management, corporate development and innovation management, graduating with a Master degree of Science. She completed her Bachelor's degree in International Management with a focus on International Strategy and Media Management at the University of Flensburg. Valerie Thiele has also been able to gain very good knowledge and qualifications in publishing and online management as well as strategic media management through her professional career in the context of her doctoral project. She dedicates her doctoral thesis to the highly relevant topic of how publishers can establish new content channels via intelligent everyday objects under the influence of the "Internet of Things" and thus considers the opportunities for the publishing business model. It aims to make a well-founded contribution to the current state of research in media management and the future of the "Internet of Things" in terms of its social, scientific and practical relevance.

ORCID ID: <https://orcid.org/0000-0002-1488-8181>